MISSOURI DEPARTMENT OF NATURAL RESOURCES
ENERGY CENTER – ENERGY REVOLVING FUND

WINDOW REPLACEMENT/WINDOW REDUCTION WORKSHEET

BUILDING	LOCATION	DATE

To estimate the savings of replacing existing windows with efficiency upgrades, the following information must be known:

The R-Value of the new wall (window reduction only). U-Value=1/R-Value
The U-Value of the existing window (See U-Value table below).
The U-Value of the replacement window (See U-Value table below).
The total area of the windows being replaced (square feet).
The heating energy cost ($/million Btu).
The heating plant efficiency (in percent).

SAVINGS CALCULATIONS

		(a) Old Windows	(b) New Windows	(c) New Wall (window reduction)
1.	Enter the U-Values			
2.	Infiltration Factor	1.00	0.14	0.00
3.	Add line 1 to line 2			
4.	Enter area			
5.	Multiply line 3 by line 4			
6.	Multiply line 5 by .100 or [(degree days)*24/10^6]			
7.	Enter the heating plant efficiency (percent divided by 100)			
8.	Divide line 6 by line 7			
9.	Enter the energy cost ($/million BTU)			
10.	Multiply line 8 by line 9			

ANNUAL SAVINGS

11. Subtract line 10b and 10c from line 10a . . . . . $_____ year

PROJECT COST

12. Enter the total cost of the window replacement including material, labor and design . . . . . $ _____

SIMPLE PAYBACK

13. Divide line 12 by line 11 . . . . . _____ years

WINDOW U-VALUE TABLE

Window System Type	U-Value*
Single Glass	1.10
Single Glass with storm window	0.50
Single Glass, low E coating	0.91
Single Glass, low E coating with storm window	0.44
Insulating Glass (double glass)	0.55
Insulating Glass (double glass), with storm window	0.35
Insulating Glass (double glass), low E coating	0.38
Insulating Glass (double glass), low E coating with storm window	0.32
Insulating Glass (triple glass)	0.35
Insulating Glass (triple glass), with storm window	0.25

*U-Values adapted from the 1985 ASHRAE Fundamentals Handbook.

DESCRIPTION PAGE

Window Replacement/Window Reduction Energy - Conservation Measure

Describe the existing system and the proposed energy-conservation measure (use additional sheets if necessary):